

Remarks/Arguments

The Office Action of February 10, 2006 and the references cited therein have been carefully studied and reviewed, and in view of the following representations, reconsideration is respectfully requested.

At the outset, the allowance of claims 6, 23, 25, 28 and 32, and the indication of the allowability of the subject matter of claims 37, 38, 40, 41, 43, 44 and 46 – 49 by the Examiner is hereby kindly acknowledged.

Independent claim 35 thus remains the only independent claim rejected in the case. Specifically, claim 35 is rejected as being unpatentable over Blosser et al. (USP 6,635,566) in view of Kim (USP 6,576,947).

a. The rejection should be withdrawn because there is no suggestion that would have motivated one of ordinary skill in the art to have combined the references.

Blosser et al. teach a dual damascene process of simultaneously forming a self-aligned contact and metal interconnect 11 (Figures 8 and 9 and col. 2, lines 46 – 49). On the other hand, Kim teaches a method of forming cell capacitors having HSG cylindrical layers.

The Examiner takes the position that those of ordinary skill in the art would have been motivated to have replaced the dry etch trench-forming stage shown in FIGS. 4 to FIG. 6 of Blosser et al. with the wet etching technique taught by Kim merely because the wet etching is an “alternative suitable” technique. In support of her position, the Examiner refers to MPEP 2144.07.

MPEP 2142 and 2143, and MPEP 2144.07 relied on by the Examiner, make it clear that the **prior art itself** must suggest the suitability of the teachings of the secondary reference for use in the invention disclosed in the primary reference.

The examiner can point to no such suggestion in the references.

In Kim, the only reason that the trench 312 is widened is to allow for the cylindrical capacitor with an HSG layer to meet the 170 nm design rule of the photolithography process conventionally employed for storage node formation (see,

for example, the paragraph spanning columns 7 and 8 in Kim). Nothing about this need in forming cylindrical capacitors also pertains to the forming of contact plugs. Thus, the prior art fails to provide any suggestion to combine the references in the manner proposed by the Examiner.

b. Even assuming, *arguendo*, that one of ordinary skill in the art were somehow motivated to have employed the wet etching technique of Kim in the method disclosed by Blossé et al., the resulting combination would still not meet Applicants' claim 35

Claim 35 sets forth a trench forming process wherein a first etching process using a photoresist pattern as an etch mask is performed to form an initial trench in an insulation film, the photoresist pattern is removed, and a second etching process is subsequently performed so as to widen the trench **without substantially altering the depth of the trench**. Refer to par. [0125] of Applicants' original specification, for example.

Blossé et al. disclose a dual damascene process wherein a first etching process using a photoresist pattern 5 as an etch mask is performed to form an initial trench 6 in an insulation film 4 (Figures 2 and 3), the photoresist pattern 5 is removed, and a second etching process is subsequently performed so as to widen the trench 6 (figures 4 – 6). However, unlike Applicants' invention of claim 35 and contrary to the position taken by the Examiner, **the depth of the trench 6 is substantially increased by the second etching process**. Compare Figures 4 and 6.

Accordingly, even assuming, *arguendo*, that one of ordinary skill in the art would have been motivated to have used wet etching for expanding the trench 6 in the method of Blossé et al., i.e., to progress from the structure shown in Figure 4 to the structure shown in Figure 6, the resulting method would still not meet Applicants' claim 35 as such a resulting method would still entail a substantial alteration in the depth of the trench


For these reasons, namely the lack of suggestion that would have motivated one of ordinary skill in the art to have combined the references in a manner resulting in Applicants' claim 35, it is seen that the references do not render the subject matter of such claims obvious under 35 USC 103. Accordingly, early reconsideration and the allowance of all of Applicants' claims are respectfully requested.

Respectfully submitted,

VOLENTINE FRANCOS & WHITT, PLLC

By:

For:

 Reg No 33289
Michael Stone
Reg. No. 32,442

CUSTOMER NO. 20987
VOLENTINE FRANCOS & WHITT, PLLC
One Freedom Square
Suite 1260
11951 Freedom Drive
Reston, VA 20190
Tel. (571) 283-0720

Date: October 24, 2006